

Applicants: Mark McCormick, *et al.*
Application No.: 10/675,329
Response Dated: October 14, 2008
Reply to Office Action Dated: April 14, 2008

LISTING OF THE CLAIMS

This listing of claims represents the current status of the claims in the above-identified application.

Listing of Claims:

1. (Withdrawn) A microarray comprising a plurality of subarrays wherein at least one subarray contains a set of nucleic acid probes of interest, and wherein at least one subarray is surrounded by an interstitial region; wherein the interstitial region comprises at least one visible or machine readable alignment marked conformed by photopatterning a group-bearing phosphoramidite onto the interstitial region of a microarray.
2. (Withdrawn) The microarray of Claim 1 wherein the alignment mark comprises a hapten and an illuminating compound.
3. (Withdrawn) The microarray of Claim 2 wherein the hapten is a biotin or DNP.
4. (Withdrawn) The microarray of Claim 2 wherein the illuminating compound is streptavidin-conjugated to a reporter molecule.
5. (Withdrawn) The microarray of Claim 4 wherein the reporter molecule is selected from the group consisting of a catalytic antibody, colloidal metal suspension, dye, fluorophore-labeled microparticles, alkaline phosphatase, and horseradish peroxidase.
6. (Withdrawn) The microarray of Claim 1 wherein the alignment mark is flexibly deployable within the array and can be placed with great precision immediately adjacent to and surrounding the subarray.

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7. (Currently amended) A method for making a microarray having a plurality of subarrays surrounded by a visible or machine readable alignment mark in an interstitial region of the microarray, the method comprising the steps of:

- a) selecting at least one probe set comprising probes of interest;
- b) building the probe sets on a microarray to provide a plurality of subarrays, wherein the probe sets are built with a MASTTM maskless array synthesis instrument; and
- c) depositing a protected hapten and ~~an illuminating compound around the plurality of subarrays to form the alignment mark~~ on the interstitial region of the microarray, wherein the ~~alignment mark is formed~~ hapten is deposited by the same MASTTM maskless array synthesis instrument used to build the probe sets of step b);
- d) deprotecting the hapten; and
- e) attaching an illuminating compound to the hapten to form the alignment mark.

8. (Previously presented) The method of Claim 7 wherein the hapten comprises biotin or dinitrophenol (DNP).

9. (Original) The method of Claim 7 wherein the illuminating compound is streptavidin conjugated to a reporter molecule.

10. (Currently amended) The method of Claim 9 wherein the ~~streptavidin is bound to~~ a reporter molecule is selected from the group consisting of a catalytic antibody, colloidal metal suspension, dye, fluorophore-labeled microparticles, alkaline phosphatase, and horseradish peroxidase.

11. (Currently amended) The method of Claim 7 wherein the hapten is deposited by photopatterning a group-bearing phosphoramidite onto the interstitial region of the microarray,

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and wherein the hapten is deposited following photodeprotection by mirrors of the ~~MA~~^{STM} maskless array synthesis instrument.

12. (Previously presented) The method of Claim 11 wherein the phosphoramidite is 2-(2 nitro phenyl) propoxy carbonyl (NPPOC).

13. (Previously presented) The method of Claim 7 wherein the alignment mark is flexibly deployable within the array and can be precisely placed immediately adjacent to and surrounding the subarray.

14. (Withdrawn) A method for aligning microarrays, the method comprising the steps of:

- a) providing the microarray of Claim 1;
- b) exposing the microarray to an optical detection device to detect the visible or machine readable alignment mark on the interstitial region surrounding the subarrays; and
- c) aligning the microarray according to the location of the visible or machine readable alignment mark so as to accurately deposit samples into the subarrays of a microarray.

15. (Withdrawn) The method of Claim 14, wherein the optical detection device is either a scanning laser diode or an image capture and analysis device.

16. (Withdrawn) The method of Claim 14, wherein the samples are deposited into the subarrays using robotics.